Determinants of intergenerational coresidence in urban China: a closer look at older women and young households

by

Shruti Korada

Advisor: Denise Hare

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Determinants of Intergenerational Coresidence in Urban China: A Closer Look at Older Women and Young Households

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Abstract

Intergenerational coresidence occurs as families adjust to weak institutional mechanisms. In urban China, the living arrangements of older women in young households result from the support that either of these actors require. Women are adversely affected by the labor market, which weakens their financial independence in middle and later stages of life. However, they are able to provide unpaid care labor to young households. I use two decades of data from the China Health and Nutrition Survey to model the characteristics of older woman and young households that are likely to be significant determinants of their coresidence. Coefficient estimates from probit and linear fixed-effects regressions find that coresidence is driven primarily by care needs of the young household. Women aged 50-70 years join young households to substitute for the unpaid household labor of the young married female (the "young wife"). However, it is not clear that this care work involves caring for children. Unmarried older women are more likely to coreside than their married counterparts. The findings have implications for state policy regarding increased care support for elders and children, and raising formal retirement ages of women to close the gender retirement gap.

Introduction

Understanding the living arrangements of older women in urban China is central to unpacking the decisions that families make in response to weak institutional mechanisms. Gender gaps in the urban labor force and weak institutional arrangements for elder care have created an environment in which "extended family living arrangements serve as a beneficial family adaptive strategy...a social exchange between generations" (Chen 2005). As women work and earn less in the formal labor market than men, familial dependence for financial and physical health constraints emerges. While their income insecurity requires compensating support from a young household, women may be becoming more involved in care work that involves them moving into young households as a net benefit to the household. Under these circumstances, an older woman can be both a recipient and provider of unpaid care.

The determinants of intergenerational coresidence have been studied in the literature using regression analysis, but to different ends. Coresidence studies have taken labor force participation (Maurer-Fazio, Connelly, Chen, and Tang 2011), retirement trends (Connelly, Maurer-Fazio, and Zhang 2014), family values (Logan and Bian 1999), and the effects of economic transition on care needs (Zhang 2004) as their focus. To my knowledge, this study is the first to use regression analysis to determine which characteristics of older women and young households are most significant in determining whether they live together.

Due to state population control interventions such as the one-child policy (1979), fertility rates have dramatically fallen in China. This has resulted in an inverse population age pyramid, illustrated by the 4-2-1 population structure–for every four grandparents, there are two parents, and a single grandchild. The aging population is a major obstacle to China's economic growth, depressing labor productivity and straining mechanisms that allocate old-age insurance and pensions. The academic literature discusses coresidence as an intergenerational transfer of resources to compensate for lack of state support. The government policies to consider are the increase in formal urban retirement age and state support for elder care and unpaid care labor. The characteristics of older women and young households that lead them to coreside provide important insight into how these actors respond to care needs and what distortions policies might cause.

This study is organized into four chapters. Chapter 1 reviews the literature to identify factors relevant to coresidence of older women and young households. Chapter 2 describes the survey data and construction of the samples used in the empirical analysis. Chapter 3 presents and discusses the regression results. Chapter 4 concludes.

Chapter 1

Literature Review

1.1 Coresidence

Intergenerational coresidence, a living arrangement that brings multiple generations of a family into a single household, reflects the ability of households to respond to different family members' needs by pooling resources. In China, the traditional household form is the patrilocal extended family. This most commonly manifests as the stem household, which includes an adult married couple, their children, and parent(s) of the male head of the household. While most parents and children do not prefer coresidence, state policies that reinforce gender bias, limit social services, and reduce housing opportunities are as important as traditional values in reinforcing surprisingly stable coresidence rates over time (Logan, Bian, and Bian 1998). Thus, intergenerational coresidence is the result of a two-part decision-making process involving both the circumstances of the older adult(s) and those of the young family. In the specific case of the older woman and young households modeled in my study, the older woman is generally the mother or mother-in-law of the young male household head.

1.2 Older women's factors

Gender differences in the urban Chinese labor market make older females vulnerable to income insecurities. Women retire earlier than men, are likely to have less pension coverage after retirement, and have been subject to the adverse effects of China's transition from a socialist to market economy.

As women work and earn less in the formal labor market than men, spousal dependence for financial and physical health constraints are likely to be present.

Though at younger ages men and women have similar labor force participation rates, there is a steep decline in the proportion of women in the formal labor force after age 45 (Maurer-Fazio, Connelly, Lan, Tang 2009). This trend is partially explained by the gendered disparity in the official retirement age, under which formal urban retirement ages are 60 years for urban males, 55 for women in the state sector, and 50 for women in the private sector (Cai, Giles, Wang 2011). The difference in mandatory retirement age by gender was originally established in the socialist economy to protect the interests of women facing a greater burden of care work. Now, under the more competitive conditions of the market economy, women have incentives to exit the labor force earlier if their reservation wage for new employment is raised by pension inflows and delayed retirement of their husbands. The lower mandatory retirement age for women can also deter employers when assessing the relative returns of employing a male or female older than 40 (Cai, Giles, and Wang 2011). Thus, the institutional biases in retirement ages link women's well-being, and perhaps coresidence decisions, to their husband's decisions.

Cai, Giles, and Wang (2011) discuss the role of higher wealth (which creates a higher reservation wage) and care demands in the sustained exit of women from the formal urban labor force. They find that elderly women are more likely than men, in both urban and rural China, to receive net financial and care transfers from children. In urban areas, this aligns with the fact that while 6 percent of men did not have a pension-eligible occupation, 47 percent of women did not. If coresidence with children arises from financial or mobility constraints for the older woman, her marriage status may be a significant determinant of coresidence. Research by Cai, Giles, and Meng (2006) supports this claim, finding that after the loss of one of the parents, coresidence of the widowed spouse with the adult children is far more likely. Chen (2005) finds that widowhood independently increases likelihood of the surviving parent to move from close proximity into the household of the adult children by two and a half times. I expect an elderly woman who is widowed or divorced to be at greater risk for strategically living with a younger family given the lack of spousal support.

Women's labor force participation has also been more sensitive to the transition to market economy than the work trends of men. Women were disproportionately impacted by the restructuring of state sector enterprises, the bulk of which occurred between 1995 and 1997. Older workers were encouraged to take early retirement with benefits, and the lower female retirement age meant a far higher proportion of women took advantage of the opportunity (Cai, Giles, and Wang 2011). These reforms also

restructured pension flows, and issues concerning implementation and noncompliance of firms in organizing pensions means that much of the older population who were working prior to reforms have not been able to save quickly enough to smooth their consumption in later ages. Pensions are a crucial component of post-retirement livelihood, with 2005 data showing that 45 percent of urban residents over 60 report pension income as their most important source of financial support (Cai, Giles, and Wang 2011). In conclusion, increased exit from the labor force due to restructuring and interruption to pensions may explain changes in the coresidence trends of urban women in the late 1990s and early 2000s.

Since good health, fitness, and strength deteriorate with age, the older old are more likely to require support (Connelly, Maurer-Fazio, and Zhang 2014). They may be in need of both financial support due to gender disparities in the labor market alongside spotty pension flows, and physical support, due to decreased mobility that limits regular activities and self-care. Older women are more likely than their male counterparts to report limitations on activities of daily living, and particularly widows and low-income women are less likely to be financially secure (Chan 2009). Family arrangements often compensate for lack of income or institutionalized care, and China lacks a well-developed elder care sector (Cai, Giles, and Meng 2006). Pezzin and Schone (1999) also find that intergenerational coresidence is an important mode of assistance to elderly persons. Cai, Giles, and Meng (2006) report that while family transfers to elderly residents respond positively to declining levels of pre-transfer pension income, these private transfers do not fully compensate for decreases in retirement income. The authors motivate the study by pointing out that financial transfers substitute for China's poorly-developed elder care sector. Similar to these family transfers, coresidence can be understood as an ongoing transfer of care to the older woman, and therefore motivated (at least in part) by her need.

In sum, there are four major factors that are likely to affect whether an older woman in urban China coresides with a young household: her education level, retirement income, marital status, and age.

1.3 Young household factors

Though intergenerational coresidence is driven in part by the circumstances of the older woman, characteristics of the young household also play an important role. Ward, Logan, and Spitze (1992) find that the roles of parent and child predictors of coresidence are most consistent with a view that child needs and situations are the

primary factors in coresidence for parents in both middle and later life. The primary household determinants of coresidence that emerge from the literature are household size, the working status and education level of the young wife, and household income.

The number of other members in the household is likely to affect whether or not the older woman coresides. There may be a crowding out effect, whereby the increase in other household members directly decreases the space and resources that can be allotted to the older woman. However, if older women are exiting the labor force when they are still productive, they may provide household maintenance or care work that add economic value to the household. Unpaid care work generates human capital and contributes to economic growth (Folbre and Nelson 2000). Dong and An (2012) use time-use data to confirm that women do more unpaid work then men in China. They also observe heterogeneity among women, finding that those women with less education, lower incomes, and lower wages are more at risk for doing unpaid work. An older woman may be joining to care for the young household as number of family members grow, since the cost of her time is low relative to other productive, younger members of the household.

Another household factor that increases the household's need to foster in an older woman is the presence of children below 18 years of age. Older women can provide care for grandchildren so their adult children can capitalize on new opportunities in a rapidly growing economy. Coresidence between grandparents and young grandchildren is common in China, and some grandmothers who coreside with their grandchildren spend nearly as much time taking care of the child as the mother (Chen 2014). However, some scholars find that care for young children plays a non-substantial role in coresidence of the older woman. Cai, Giles, and Wang (2011) find that the working status of older Chinese urban workers does not systematically decrease with an increase in the number of family members for whom they might provide care. They argue that family care provision is not a sufficient explanation for the decline in urban women's labor force participation. Chen (2005) also remarks that China's inverse pyramidal population age structure, in which there are four grandparents to one grandchild, implies that childcare should be less of a strain.

If the household's need to foster in an older woman is driven by care needs, the working status of other caregivers in the household is likely to play a sizable role in determining coresidence. The primary caregiver in the young household would be the young wife, probably the daughter or daughter-in-law of the older woman. This young wife will be much more likely to be employed in the formal labor force than the older woman, and will also be responsible for the household's care needs. Qi

and Dong (2013) find that Chinese women are more likely than men to experience interference of their formal labor by housework activities. They estimate that more than one-fourth of the gender-earnings gap is explained by interruption of housework activities. The young wife's education status is also likely to earn her a higher wage in the labor market since returns to education have increased over time (Maurer-Fazio 1999, Zhang et al 2011). Those who were students prior to economic reforms, who saw their education interrupted by the Cultural Revolution, will have lower lifetime savings for when they retire. Quality of education has improved much since reforms began in the late 1970s, with a marked increase in enrollment in higher education institutions. If the educational attainment of the young wife raises her reservation wage, it may be more cost-effective for older mothers to shoulder the care work. Therefore, the working status of the young wife is a significant determinant of the older woman's coresidence. This aligns with the positive effect of young children on an older woman's coresidence, but it adds the idea that the variable is also dependent on education of the young mother to determine the relative reservation wage of the older woman and the young wife. However, a young wife working outside the home may preclude the young household's ability to provide care to an older woman. Pezzin and Schone (1999) find that competing demands on daughters' time reduce both coresidence of elderly parents and propensity to provide elderly parents with informal care. Thus, if elderly women are involved in providing informal care in the stem household, through their participation in unpaid household labor they may allow the younger working-age women in the household to participate in the formal labor force. Future generations of elderly will have higher salaries and savings due to increased educational attainment, China's rapid economic growth, and better ability to consumption smooth.

China's centrally-controlled urbanization and consistently high growth rates have brought large increases in standard of living and modernization in the cities. The rise in proportion of nuclear households is partially explained by newly married couples having the financial ability to establish a household separate from their parents (Chen 2009). This demonstrates a fulfillment of desire for privacy as wealth increases. By the same token, Chen (2009) finds that overall, increases in household wealth decreases the risk of family division in urban China. Thus, increases in wealth enable the family to act on their preferences, whether they be for privacy or cohesion. In the case of older women's coresidence with young households, the wealth of the young household may enable them to financially support the older women in lieu of coresidential care, or fulfill a desire to support her despite of other household constraints (such as household

size). Regardless, household income may play an independent role in determining coresidence.

In sum, there are six major factors of the young households in urban China that are likely to affect whether or not they foster in an older woman: the age, education level, and working status of the young married woman, the number of young children in the household, the total household size, and the household's income.

Chapter 2

Data and Empirical Methods

2.1 The China Health and Nutrition Survey

The data are taken from China Health and Nutrition Survey (CHNS), a large-scale household panel survey designed to "examine the effects of the health, nutrition, and family planning policies and programs implemented by national and local governments and to see how the social and economic transformation of Chinese society is affecting the health and nutritional status of its population." Nine survey waves were conducted between 1989 and 2011, collecting data on 4400 households with a total of 26,000 individuals in nine provinces that vary substantially in geography, economic development, public resources, and health indicators. The data used here are publicly available on the survey website. The survey team has organized longitudinal files divided by subject (marriage and relationships, household income, education, jobs, etc.) that have been merged as necessary to create the samples for this analysis. More information about the CHNS is available in Appendix A.

2.2 Determinants of coresidence

Coresidence is taken here to be the result of a strategic decision involving two actors: a young household and an older woman. The decision to live together involves the life circumstances of both young households and the elder woman who might join them. Therefore, the two-part empirical analysis tests the predictive power of both actors' characteristics in determining coresidence.

2.2.1 Characteristics of older woman

The first part of the empirical method takes the elder women as the unit of analysis. It tests the predictive power of characteristics of the entire sample of urban older women in the CHNS data. To construct the sample, I isolated all urban women aged 40 years and older and merged the variables of interest into the master file. Of the older women's set of characteristics, the variables of interest are marital status, age, education level, and retirement income.

Though the term "older woman" here is a gross misnomer, it is a useful label to characterize the factors that put the sample women at risk for coresidence. The choice of the minimum age is based on the age at which there is a steep decline in the percentage of women working in the urban labor force (Cai, Giles and Wang 2011). Marital status is a binary variable which is coded 1 if the woman reports being currently married, and 0 if she has never been married or is divorced, widowed, or separated. A majority of the women coded 0 are widowed. Currently working is a binary variable coded 1 if the woman reports that she is currently working (in the formal labor force), and 0 if she reports that she is not currently working. Completed high school is a binary variable created from a continuous variable that asks how many years of formal education the individual has completed.

2.2.2 Characteristics of the young household

The second part of the empirical method takes young families as the unit of analysis. To construct the sample, I isolated all households with one married couple where both spouses are younger than 40 years and the variables of interest were merged with the master file. Derived from the literature, there are two sets of characteristics used in this part of the analysis. First, the household characteristics are total household income, number of members in the household (household size), and the number of children divided into three age groups commonly used in the literature. Second, the attributes of the female spouse in the young couple, whose care work burdens are likely to factor into the household's decision of fostering in an older woman, are relevant to the analysis. She is referred to herein as the "young wife," and the relevant characteristics included are her age, working status, and level of education.

The total income variable used in the analysis is defined as the total income from all sources. The retirement income of the older woman was subtracted from the household income if an older woman was coresident. Despite the risk of endogeneity, this variable was included in lieu of another variable that specifically measured

household non-retirement income, because the use of the latter would have reduced the household sample size by one-third.

2.2.3 Construction of the dependent variable

Once both samples were created, a dependent variable indicating coresidence was generated. It is helpful to know that each individual in the CHNS data is identified by a household ID and an individual ID within that household (line ID). It follows that a particular individual in a particular survey year in the longitudinal data can be identified using three variables: household ID, line ID, and survey year. This schema applies across the subject-based datasets and is integral to merging and organizing the data. The sample of older women is at the level of the individual and organized by household ID/line ID/survey year, while the sample of young households is at the household level of analysis and organized by household ID/survey year.

To create a binary dependent variable indicating which older women lived in a young household, a dummy "young_household" was coded 1 for all observations in the young household sample and merged into the sample of older women by household ID and survey year. Successfully merged observations thus tagged older women living in young households with an "in_young_household" dummy coded 1. Remaining women, assumed to not be residing in young households, were coded 0. This is identified as the "Living in young household" binary dependent variable in Table 2.1 below.

Similarly, to create a binary dependent variable indicating which young households contain an older woman, a dummy "older_woman" was coded 1 for all observations in the sample of older women and merged into the young household's data by household ID and survey year. Successfully merged observations thus tagged young households with older women residing (in a particular year) with an "older woman" dummy coded 1. Remaining households, assumed to not have an older woman residing in them, were coded 0. This is identified as the "Woman 40+ present" binary dependent variable in Table 2.2 below.

Table 2.1 provides summary information for the resulting sample of older women. There are 3,544 unique women surveyed by the CHNS in the nine survey years between 1989 and 2011, with 9,880 total observations. The binary dependent variable "Living in young household" is coded 1 for every older woman who lives with a young family and coded 0 for every older woman who does not. The mean indicates that 3.7% of the older women in the CHNS data live with young families. The women in the sample range from 40 to 101 years old, with a mean age of 57 years. 80% of the

Table 2.1: Summary Statistics for Sample of Women Aged 40+

	Observations	Mean	S.D.	Min	Max
Living in young household	9,880	0.0365	0.188	0	1
Age	9,880	57.04	11.66	40	101
Currently married	9,880	0.796	0.403	0	1
Currently working	9,880	0.358	0.479	0	1
Completed high school	9,880	0.0956	0.294	0	1
Retirement income (Yuan/1000)	9,880	3.776	8.024	0	120.0
Number of women	3,544				

women are married, and 40% of them are working. Keep in mind that a woman may be surveyed in multiple years, so her marriage and working status may change over time, as does her age. Nearly 10% of the women have completed a high school education, and the average retirement income is 3,776 yuan.

Table 2.2 provides summary information for the resulting sample of young households. There are 963 young households surveyed by the CHNS in the nine survey years between 1989 and 2011, with a total of 2,171 observations. The binary dependent variable "Women 40+ present" is coded 1 for every household with an older woman present and coded 0 for every household that does not. The average household has 3.6 individuals, a value that stays relatively constant across the time period. The average household income is 22,960 yuan, and the negative values for reported income have not been recoded as they probably reflect losses generated in business. The maximum values of 3 and 4 for the children variables indicate that some households may have several children a certain age group in their household, but the mean values are all less than 1, since most households, especially nuclear households, probably have 1 child due to strict enforcement of the one-child policy in urban China. The mean age of the young wife is 32 years, 84% of them report to be working, and 23% have reported completing high school. The expected cohort effect of younger women having higher education substantiates the 11 percentage point increase in those who completed high school as compared to the older woman's sample mean.

Table 2.2: Summary Statistics for Sample of Young Households

	Observations	Mean	S.D.	Min	Max
Woman 40+ present	2,171	0.185	0.388	0	1
HOUSEHOLD CHARACTERISTICS					
Number of family members	2,171	2.403	0.832	2	9
Total income (Yuan/1000)	2,171	22.67	25.52	-205.3	381.1
Children aged 0 to 5	2,171	0.436	0.589	0	3
Children aged 6 to 12	2,171	0.646	0.677	0	4
Children aged 13 to 18	2,171	0.139	0.394	0	3
YOUNG WIFE'S CHARACTERISTICS					
Age	2,171	32.07	4.198	19	39
Currently working	2,171	0.843	0.364	0	1
Completed high school	2,171	0.225	0.418	0	1
Number of households	963				

2.3 Empirical methods

The effect of each set of characteristics on the likelihood of coresidence will be measured through regression analysis. As there are two options for the outcome ("coresiding" and "not coresiding") it is appropriate to use a probit regression method, which allows for a binary outcome. Therefore the first column of results lists the probit marginal effects estimated using the *dprobit* Stata command. The second column of results lists the linear regression fixed effects estimates. The fixed effects estimation exploits the panel data by controlling for unobserved time-invariant characteristics of a particular woman or particular household over time. Such characteristics include geographical region and education level for the woman and household registration type and residence size for households.

Both sets of correlation regressions include a full set of geographical and time controls using province and survey wave dummy variables. The geographical controls account for differences across regions that might affect likelihood of coresidence, such as price of formal elder care and child care, economic restructuring policy, GDP growth rates, unemployment rates, and percentage of minorities and rural-to-urban migrants in the population.

Chapter 3

Results and Discussion

3.1 Elder women as the unit of analysis

Table 3.1 displays the probit marginal effects and the individual-level fixed effects for the older woman's characteristics that may affect her coresidence status. Her marital status is significant and negatively correlated with her likelihood to coreside with a younger family. In the probit model the probability of living with a young family decreases 11 percentage points if she is married and this negative effect strengthens to 13 percentage points if we control for unobserved characteristics of individual women. This result is well-supported by the literature that widowed women, who comprise the majority of unmarried women, are much more likely to coreside. Widows are likely to be less income secure given that they do not have support from their husbands. Married women also may have more needs to address in their own household, while widows have a lower opportunity cost to engage in care work in the young household.

The older woman's income from retirement has a small but statistically significant negative effect on her likelihood of coresidence, where a 1000 yuan increase in retirement income decreases her chances of coresiding by 0.04 percentage points. A woman's completion of high school has a small but positive and significant effect on her coresidence with a young family. This is unexpected, as a more highly educated woman is more likely to be income secure and work in the state sector, where she is more likely to receive a steady and substantial pension income. This may be a spurious correlation with the earnings of her children. The woman's income proxying for her children's income might indicate that young households with higher incomes have the ability to support their aging parents financially, a substituting for bringing them into the house for care. The effect of high school disappears, however, when time-invariant characteristics unique to the woman are controlled for.

Table 3.1: Determinants of Coresidence: Characteristics of Women Aged 40+

	(1) Probit marginal effect	(2) Individual fixed effects
Currently married	-0.108***	-0.126***
	(0.0110)	(0.00773)
Currently working	0.000268	-0.00898
	(0.000866)	(0.00542)
Retirement income (Yuan/1000)	-0.000198***	-0.000368**
	(7.67e-05)	(0.000350)
Completed high school	0.00574**	0.00755
	(0.00232)	(0.01037)
Age effects (baseline: ages 40-44)		
45-49	0.0147	0.00119
	(0.00978)	(0.00635)
50-54	0.0270*	0.00485
	(0.0141)	(0.00730)
55-59	0.0572**	0.00313
	(0.0229)	(0.00842)
60-64	0.0732**	-0.00056
	(0.0286)	(0.00974)
65-69	0.0649**	-0.0214*
	(0.0275)	(0.0113)
70-74	0.0467**	-0.0715***
	(0.0226)	(0.0128)
75-79	0.0187	-0.167***
	(0.0124)	(0.0151)
80-84	0.000778	-0.255***
	(0.00350)	(0.0188)
85+	-0.00219	-0.296***
	(0.00157)	(0.0104)
Constant		0.164***
		(0.0104)
Observations	9,880	9,880
Number of unique women		3,544

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

While women aged between 50 and 75 years are 2-7 percentage points more likely to reside in a young household than the 40-44 year olds in the baseline group, this positive effect does not appear in the fixed effects model. Instead, controlling for the woman's individual attributes, women in their late sixties are about 2 percentage points less likely to live with a younger family, and the negative effect of age increases linearly so that women aged older than 85 are a substantial 30 percentage points less likely to live with young families. Both the probit and fixed effects estimates indicate that coresidence is occurring with women aged 50 to 70 in the young households. If the younger of the older women sample are more productive, this result indicates that they are coresiding with young households to help rather than receive help.

3.2 Young families as the unit of analysis

Table 3.2 displays the probit marginal effects and household-level fixed effects for the young household's characteristics that may affect the likelihood of fostering in an older woman. The household is between 22 and 27 percentage points more likely to foster in an older woman with each addition of a household member older than 18 years. Though variables accounting for the presence of young children and their care needs are included, household size still serves as a proxy for other household members aged older than 18 who may need care. This is especially likely considering it may be proxying for the presence of the older woman's husband who may have moved in with her.

The presence of a child in the house, regardless of the child's age, does not have any effect on the older woman's likelihood of coresidence. This result runs counter to the hypotheses derived from the literature, which predicts that the young household's need for child care drives coresidence. Chen (2014), using CHNS data, notes that a sizable proportion of young children are cared for in grandparents' houses, where the parents are not present. This skip-generation living arrangement is not observed here. This may explain why older women's care for their grandchildren, which is widely reported in the literature, is not supported by the results.

The young wife's working status is positive and significant in the fixed effects model, indicating that the young wife's participation in the formal labor force increases the likelihood of an older woman to coresidence by 10 percentage points. This is consistent with the story that older women are substituting for the presence for the young wife in the household, perhaps by helping with household chores and care work.

Table 3.2: Determinants of Coresidence: Characteristics of Young Households

VARIABLES	(1) Probit marginal effects	(2) Household fixed effects
Total income (Yuan/1000)	-0.000537	0.000257
	(0.000365)	(0.000211)
Number of household members aged 18+	0.217***	0.274***
	(0.0157)	(0.00835)
Children aged 0 to 5	-0.0613	0.0260
	(0.0423)	(0.0251)
Children aged 6 to 12	-0.0308	0.00754
	(0.0370)	(0.0219)
Children aged 13 to 18	-0.0372	0.0127
	(0.0634)	(0.0324)
YOUNG WIFE'S CHARACTERISTICS		
Age	0.0847***	0.0626***
	(0.0254)	(0.0144)
Age (squared)	-0.00141***	-0.000969***
	(0.000407)	(0.000229)
Currently working	0.0434	0.102***
	(0.0278)	(0.0249)
Completed high school	0.0173	0.0112
	(0.0217)	(0.0156)
INTERACTION EFFECTS		
Wife working and children 0-5 present	0.00375	-0.0687***
	(0.0445)	(0.0252)
Wife working and children 6-12 present	0.00357	-0.0501**
	(0.0379)	(0.0211)
Wife working and children 13-18 present	0.0682	-0.0223
	(0.0649)	(0.0321)
Constant		-1.518***
		(0.228)
Observations	2,171	2,171
Number of unique households		963

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The interaction effects parse out the relation between the young wife's working status and the presence of young children. These results are puzzling, as they indicate that having a young working wife and young child in the house decreases the likelihood of an older woman's coresidence by 5 to 7 percentage points. Combined with the overall increase in probability of coresidence as the young wife goes to work, the negative effects of these interaction variables may support the idea that older women are entering the household as a substitute for the young wife, but perhaps not in her capacity of giving care to children. Instead, older women may be providing care to other adults or doing housework. The young wife's age variables indicate that likelihood of an older woman coresiding increases with the age of the young woman, at a decreasing rate. The marginal effect of another year of the young wife's age, using the sample mean (32.07 years), is -0.5 percentage points in the probit model and -0.04 percentage points in the fixed effects model. The young wife's age at which this effect reaches its peak is 30 years and 32.3 years in the two models, respectively.

The education level of the young wife and the household income variable have no significant effects on coresidence in either model. That the two clearest measures of household's income level and income security are insignificant demonstrate that the household's disposable income does not independently affect the likelihood of fostering in an older woman. Evidence in the literature that financial support is a substitute for intergenerational coresidence would be reinforced by negative and significant coefficient estimates for these two variables, which we do not see here.

Combining findings from the two sets of regressions yields some interesting results. Older women are largely driven by their unmarried status to coreside with young households. This may be because they are more income insecure without their husband's support, or they have more time and freedom to contribute unpaid labor to the young household. The two mechanisms are not mutually exclusive and both support the claim that widows have greater incentive to coreside with young households. Controlling for marital status, working status, income, and education level, women are more likely to coreside in the ages directly following retirement, rather than in older old ages. If women are more productive in these early stages after leaving the formal labor force, they are may be joining young households to give rather than receive care. These results are supported by the main finding from the young household's perspective, that the young wife's participation in the formal labor force increases the likelihood of an older woman's coresidence.

From both perspectives, income does not play a large role in explaining coresidence. The inclusion of the spouse's labor force participation and earnings would

shed light on this surprising result. If the older woman is married, information on her husband's income and coresidence status are important omitted variables. Similarly, information on the young wife's husband would tighten the argument that an older woman substitutes for the young wife's unpaid household labor. Depending on who is producing the income in the household, it is possible that rising incomes will result in more women working in the household. If the male household head is solely responsible for the financial stability of the family, more working-age women will stay in the household to help school-going children reap the benefits of increased returns to schooling. If the rising income per household is because both men and women are working more and the women's earnings have increased relative to men's over time, then we would expect the young mother to be spending more time outside the household, increasing the likelihood of having an elder woman present to do care work in the household.

Conclusion

Coresidence between an older woman and young households in urban China is a living arrangement that can arise in response to care needs of either party. Women's participation in China's urban labor market leaves them vulnerable to insecurities and young households have care needs that may be unmet as both parents work in the labor force. Chen (2005) provides evidence that parental residence often responds to changed circumstances over the life course, adjusting to childcare needs, death of one parent, and health status of parents.

This study supports these findings. Using data from the China Health and Nutrition Survey from 1989 to 2011 and regression analysis, I model the characteristics of older women and young households to determine which of their characteristics affect coresidence. I find that older women are largely driven by their unmarried status to coreside with young households. Controlling for marital status, working status, income, and education level, women are more likely to coreside in the ages directly following retirement, rather than at very old ages. If women are more productive in these early stages after leaving the formal labor force, they may be joining young households to give rather than receive care. These results are supported by the main finding from the young household's perspective, that the young wife's participation in the formal labor force increases the likelihood of an older woman's coresidence.

This study has several limitations, endogeneity concerns being the primary one. Though the determinants of coresidence have been determined separately for older women and young households, the determinants are not mutually exclusive. For example, the working status of the young wife may render the household unable to fulfill an older woman's care needs. However, simultaneously, an old woman with the capacity to care for grandchildren in the young household may relieve the young wife of care duties, allowing her to work in the formal labor force. Another possibly endogenous variable is the older woman's working status. Maurer-Fazio et al (2011) find that care is a significant reason for prime-age women leaving the labor force. Perhaps care is the reason women are leaving the labor force, as in the older woman

leaving to take care of her grandchild. The interaction of labor force participation and caregiving underscores the complexity of unpacking coresidence. Finally, the presence of children, particularly the youngest ones, also have the potential to be weakly endogenous. Imagine a case in which both young parents are working and the couple is considering having a child. The household's fertility decisions could be predicated on their ability to have an extra caregiver in the household. If there is evidence of endogeneity in the analysis, different econometric methods such as instrumental variables or simultaneous equations will prove useful.

The addition of certain variables would help clarify the results. Inclusion of health status would be valuable in the older women's sample, especially since the oldest of women were not found to be coresiding more. A health variable would directly target an older woman's decrease in physical mobility or need for financial support for health care. It is not clear whether rural-to-urban migrants are present in the samples used for this study. Since rural-to-urban migrants receive much less in social benefits from the state, and since it is common for prime-age members of the family to move to the city while others stay behind in rural areas, their coresidence decisions in urban households will be formed differently. Therefore a dummy variable differentiating migrant women and migrant households from urban natives may be an informative addition.

Although I suspect that most coresident women were living with their married children, my research was unable to establish the precise kinship relations between the older women and young households. Data were also not available for how many children each of these older women have, a figure that would more accurately represent who they are likely to coreside with.

Despite these limitations, the findings have important implications. The results point to the younger of the older women's sample coresiding with young households in response to the formal labor force participation of young wives. These dynamics of care have implications for China's government policies. For example, how will older women respond to an increase in retirement ages? Connelly, Maurer-Fazio, and Zhang (2014) note that the "recent discussion of raising retirement ages in urban China and equalizing the retirement ages for men and women has ignored one important potential side effect of so doing–many of China's elders, especially women, are providing the child care that enables prime-age women to remain in the labor force." If retirement ages are raised to address labor shortages and increase productivity, the policy might lead to older women's decreased ability to address care needs. The authors go even further, positing that increasing the ratio of older people in the economy may cause

the young wives to pull out of the labor force to bear children and raise them, and remain outside of the labor force. Such a policy might actually decrease productivity and strain the elder population even further. Then, how do the present study's results inform increased state investment in elder care? As the proportion of China's elder population rises, elder care will be an increasing strain on the economy (Cai, Giles, and Wang 2011). Though the results in this study seem to emphasize the care needs of the household, the strain of care labor placed on older women when they enter young households is an important consideration in determining whether coresidence provides adequate support to elders. State support for institutionalized childcare, or support for young women to take care of their children will reduce care burdens on older women. Looking to the future of coresidence determinants–the Chinese government's curtailing of the one-child policy over the coming years will change the nature of coresidence. New cohorts of older women will have more flexibility in who amongst their children they live with. If they are joining the households to give care, there will be increased child burdens. At the same time, the current cohort of young married couples defining this study's sample of young households are going to move into old age with higher incomes and arguably more income security than the cohort of older women defined in this analysis. If that is the case, then the new cohort of older women might also have the ability to care for themselves without needing to live with younger children.

Opportunities for further research are abundant. There is a segment of the literature that has focused on what Pimentel and Liu (2004) refer to as "non-normative coresidence." Though patrifocal coresidence is a traditional norm in China, more grandparents have started to live with their female children. They may feel that daughters give better care. In fact, the oldest old who live with their daughter have better emotional health outcomes than those who live with their son (Chen and Short 2008). They may have no other option, since the family planning policies have left many urban couples with only one child. Chen (2009) finds that a daughter-in-law employed in the state sector increases the probability of family division more than if the son worked in the state sector, attributing it to the daughter-in-law's increased bargaining power to champion for her preference to establish a household separate from her in-laws. Further research could track kinship relations of the women in coresidence situations and measure how that affects the relative strength of the woman's and family's determinants of coresidence. For example, if the woman's coresidence with a daughter had weaker effects of young children and the daughter's working status than with a daughter-in-law, this could be evidence for how proportions of

care burden of adult women in household are impacted by how they are related and who has more bargaining power in the household. Another vein of study might study quasi-co-residence, where generations live near each other rather than in the same household. The CHNS cross-sectional data reveals that almost one-third of married children have parents as neighbors (Chen 2009), so this intersection between exchange of care work and separate households allows for innovative analysis. Finally, time-use data is an important alternative to labor force participation data in studying care labor and intrahousehold allocation of labor and resources. Since it involves directly asking women how they spend their time outside the labor market, it allows a more nuanced and specific analysis of the results of this study.

Appendix A

About the CHNS

This research uses data from China Health and Nutrition Survey (CHNS). I thank the National Institute of Nutrition and Food Safety, China Center for Disease Control and Prevention, Carolina Population Center, the University of North Carolina at Chapel Hill, the NIH (R01-HD30880, DK056350, and R01-HD38700) and the Fogarty International Center, NIH for financial support for the CHNS data collection and analysis files from 1989 to 2006 and both parties plus the China-Japan Friendship Hospital, Ministry of Health for support for CHNS 2009 and future surveys.

From the CHNS website [http://www.cpc.unc.edu/projects/china]:

The survey covers nine provinces that vary substantially in geography, economic development, public resources, and health indicators. A multistage, random cluster process was used to draw the samples surveyed in each of the provinces. Counties in the nine provinces were stratified by income (low, middle, and high), and a weighted sampling scheme was used to randomly select four counties in each province. In addition, the provincial capital and a lower income city were selected when feasible. In two provinces, other large cities had to be selected. Villages and townships within the counties and urban and suburban neighborhoods within the cities were selected randomly. In 1989 to 1993 there were 190 primary sampling units, and a new province and its sampling units were added in 1997. There are about 4,400 households in the overall survey, covering some 19,000 individuals. Follow-up levels are high, but families that migrate from one community to a new one are not followed. Movement within the primary sampling units and some larger urban entities is attempted.

The first round of the CHNS, including household, community, and health/family planning facility data, was collected in 1989. Eight additional panels were collected in 1991, 1993, 1997, 2000, 2004, 2006, 2009, and 2011. Since the 1993 survey, all new households formed from sample households were added. Since 1997, new households

Figure A.1: Map of Provinces Surveyed in CHNS

in original communities were also added to replace households no longer participating in the study. Also since 1997, new communities in original provinces have been added to replace sites no longer participating. A new province was also added in 1997 when one province was unable to participate. The dropped province returned to the study in 2000.

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